

Preliminary Amendment

Customer No. 01933

**Listing of Claims:**

1. (Previously Presented) A high dimensional accuracy pipe manufactured by a push-to-pass process comprising the steps of pushing at least one metal pipe in a hole provided in a die while a plug is being charged in the metal pipe, and allowing the metal pipe to pass through the hole, wherein at least one of a deviation of the outside diameter, a deviation of the inside diameter, and a deviation of the thickness in the circumferential direction of the pipe as processed is 3% or less.

2. (Previously Presented) The high dimensional accuracy pipe according to Claim 1, which is manufactured by a push-to-pass process comprising the steps of pushing at least one metal pipe in a hole provided in a die while a plug is being charged in the pipe, and allowing the metal pipe to pass through the hole so that the thickness of the metal pipe at an outlet side of the die is not more than that at an inlet side, wherein at least one of the deviation of the outside diameter, the deviation of the inside diameter, and the deviation of the thickness in the circumferential direction of the pipe as processed is 3% or less.

3. (Cancelled)

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4. (Previously Presented) The high dimensional accuracy pipe according to claim 1, wherein the die is at least one of an all-in-one type and a fixed type die.

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

22. (Cancelled)

23. (Cancelled)

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24. (Cancelled)

25. (Cancelled)

26. (Cancelled)

27. (Cancelled)

28. (Previously Presented) A stable method for manufacturing a high dimensional accuracy pipe, comprising a push-to-pass process which includes:

pushing at least one metal pipe in a hole provided in a die while a plug is being charged in the metal pipe; and

allowing the metal pipe to pass through the hole;

wherein:

while the plug is being charged in the pipe, the pipe is pushed in the hole provided in the die and is then allowed to pass therethrough,

the plug has an angle of 5 to 40° which is formed between the surface of a diameter reducing portion and a processing central axis and a length of 5 to 100 mm of the diameter reducing portion, and

the die has an angle of 5 to 40° which is formed between the interior surface of the hole at an inlet side and the processing central axis.

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29. (Currently Amended) The stable method for manufacturing a high dimensional accuracy pipe, according to Claim 28, wherein the length of a bearing portion of the plug is 5 to 200 mm.

30. (Cancelled)

31. (Cancelled)

32. (Cancelled)

33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Cancelled)

37. (Previously Presented) A manufacturing apparatus for manufacturing a high dimensional accuracy pipe, comprising:

a plug capable of being in contact with an entire inner circumference of at least one metal pipe,

at least one die having a hole capable of being in contact with an entire outer circumference of the metal pipe, and

a pipe pushing device which pushes the metal pipe,

wherein while the plug is being charged in the metal pipe, the metal pipe is pushed in the hole in the die and is then allowed to pass therethrough, whereby a push-to-pass process is performed.

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38. (Previously Presented) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim 37, wherein the die is at least one of an all-in-one type and a fixed type die.

39. (Previously Presented) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim 38, wherein the plug is a floating type plug.

40. (Previously Presented) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim 37, wherein the pipe pushing device comprises a device which continuously pushes the metal pipes.

41. (Previously Presented) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim 37, wherein the pipe pushing device comprises a device which intermittently pushes the metal pipes.

42. (Cancelled)

43. (Cancelled)

44. (Cancelled)

45. (Cancelled)

46. (Cancelled)

47. (Cancelled)

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48. (Cancelled)

49. (Cancelled)

50. (Previously Presented) A manufacturing apparatus for manufacturing a high dimensional accuracy pipe, wherein, in Claim 37, in a manufacturing apparatus having the die through which the pipe is allowed to pass, and the pushing device pushing the pipe in the die, fine adjustment means for adjusting pipe bending is provided at a position very close to an outlet side of the die, the fine adjustment means having:

a hole body through which the pipe is allowed to pass,

a support substrate which supports the hole body movably in a plane perpendicular to a pipe traveling direction, and

a hole body-moving mechanism which is supported by the support substrate and which moves the hole body.

51. (Cancelled)

52. (Cancelled)

53. (Cancelled)

54. (Cancelled)

55. (Cancelled)

56. (Cancelled)

57. (Cancelled)

58. (Cancelled)

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59. (Previously Presented) A manufacturing line for manufacturing a high dimensional accuracy pipe, comprising the push-to-pass process device as described in Claim 37, wherein a pipe-end grinding device which grinds an end surface of a pipe in the direction perpendicular to a pipe axis, a lubricant immersion coating bath in which the pipe is coated with a lubricant by immersion, a drying device which dries the pipe coated with the lubricant, and the push-to-pass process device are provided in that order.

60. (Cancelled)

61. (Cancelled)

62. (Cancelled)

63. (Currently Amended) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim ~~[[63]]~~37, wherein the plug is a floating type plug.

64. (Currently Amended) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim ~~[[39]]~~63, wherein the pipe pushing device comprises a device which continuously pushes the metal pipes.

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65. (Currently Amended) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim ~~[[39]]~~38, wherein the pipe pushing device comprises a device which continuously pushes the metal pipes.

66. (Previously Presented) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim 39, wherein the pipe pushing device comprises a device which continuously pushes the metal pipes.

67. (Previously Presented) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim 63, wherein the pipe pushing device comprises a device which intermittently pushes the metal pipes.

68. (Previously Presented) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim 38, wherein the pipe pushing device comprises a device which intermittently pushes the metal pipes.

69. (Previously Presented) The manufacturing apparatus for manufacturing a high dimensional accuracy pipe, according to Claim 39, wherein the pipe pushing device comprises a device which intermittently pushes the metal pipes.



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70. (Previously Presented) A manufacturing line for manufacturing a high dimensional accuracy pipe, comprising the push-to-pass process device as described in Claim 37, further comprising:

a pipe-end grinding device which grinds an end surface of the pipe in a direction perpendicular to a pipe axis, and

a lubricant spray coating device which coats the pipe with a lubricant by spraying, the lubricant spray coating device provided at an inlet side of the die of the push-to-pass process device.

71. (Previously Presented) A manufacturing line for manufacturing a high dimensional accuracy pipe, comprising the push-to-pass process device as described in Claim 37, further comprising:

a pipe-end grinding device which grinds an end surface of the pipe in a direction perpendicular to a pipe axis, and

a lubricant spray coating and drying device which coats the pipe with a lubricant by spraying and which thereafter dries the lubricant coating, the lubricant spray coating device provided at an inlet side of the die of the push-to-pass process device.

72. (New) The manufacturing line for manufacturing a high dimensional accuracy pipe, according to Claim 59, wherein, instead of the lubricant immersion coating bath and the drying

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device, at an inlet side of the die of the push-to-pass process device, a lubricant spray coating device for coating the pipe with a lubricant by spraying or a lubricant spray coating and drying device in which the pipe is coated with a lubricant by spraying and is then dried is provided.